MDOT
Michigan Department of Transportation

OFFICE MEMORANDUM

DATE: September 14, 2007

TO: Region Engineers
Region Delivery Engineers
TSC Managers
Resident/Project Engineers
Region Construction Engineers

FROM: Larry E. Tibbits
Chief Operations Officer

John C. Friend
Engineer of Delivery

SUBJECT: Bureau of Highway Instructional Memorandum 2007-07
Changes to Ride Quality Specification

Over the past two years, changes have been made to the Frequently Used Special Provision for Pavement Ride Quality (FUSP) 502P, which is the primary specification for ride quality for new construction and reconstruction projects. These specification changes were made to address concerns from the Federal Highway Administration regarding MDOT's use of contractor-supplied ride quality measurements. Under the new specification, the contractor will continue to perform quality control measurements; however, MDOT or its agent will perform acceptance measurements. This includes initial measurements for the percent improvement portions of projects. MDOT and consultant personnel performing acceptance measurements must be certified on the equipment they intend to operate. The Construction and Technology Division (C&T) will administer the certification program for both the operators and the equipment, including maintenance of a list of certified operators.

It is anticipated that MDOT will eventually purchase additional profilometers to accommodate region participation with ride quality acceptance measurements. In the interim, there are two accepted methods for taking measurements for ride quality acceptance.

Method A – MDOT provides a certified profiler and operator.

This requires MDOT to provide the ride quality measuring equipment along with a certified operator. There are three options available under this method:

1. Consultant Contract – MDOT is in the process of securing an open contract administered through C&T to provide ride quality testing on an as-needed basis. Consultants will be responsible for providing certified operators and ride quality equipment on a project level basis. All costs associated with consultant services will be billed on a per-project basis using construction engineering coding.

2. MDOT Equipment and Training – C&T currently has two lightweight profilers and a high speed profiler available for loan on a project level basis. Additionally, C&T provides operator training, which can be applied toward certification. Early submittal of requests for equipment or training is advised.
3. C&T Equipment and Staff – At the request of the project office, C&T can perform acceptance measurements directly using a high speed profiler. However, C&T staff is not always available to provide profiling on multiple projects in a timely manner. Selection of an alternate method is advised. Please contact Bob Farnum (farnumb@michigan.gov) and Tom Hynes (hynest@michigan.gov) to determine availability.

Method B – MDOT provides a certified operator for contractor-supplied ride quality measurement equipment.

This method requires MDOT to provide a certified operator, but utilize the contractor's certified ride quality measurement equipment. Discuss acceptance measurement methods at the pre-production meeting and make decisions promptly to coordinate staff and equipment. Method B requires mutual agreement between MDOT and the contractor. Training and coordination of shared equipment with C&T may be necessary.

The project office can make arrangements to utilize the contractor's certified ride quality equipment and assign an MDOT employee or its agent to perform ride quality measurements. Due to liability, the contractor must agree to permit MDOT the use of their equipment. The contractor may elect to provide a driver for the equipment; however, the MDOT employee or its agent must be in complete control of the ride quality data collection and evaluation at all times.

C&T can certify employees or its agents to use contractor-supplied equipment. However, since there is a wide variety of equipment used on MDOT projects, the contractor may be required to provide the bulk of the training necessary for the MDOT employee or its agent to become familiar with their respective ride quality measurement equipment. It is anticipated that the contractor's assigned operator and equipment will need to be available on the project site for several hours to conduct certification training for the designated MDOT employee or consultant staff. The certification of an operator is only valid for the particular type of equipment for which they were trained and certified to operate (brand name and general travel speed). Therefore, a current certified operator will need additional training and certification when operating a different brand of ride quality equipment other than what they were initially certified to operate.

When using Method B, the contractor's certified equipment must be validated for accuracy at one of the department's designated ride quality validation sites each day prior to taking the acceptance measurements on the project. See section H4 of the specification for various options. This will verify the equipment is working properly. C&T is currently establishing validation sites throughout the state and will publish their locations and respective measured ride numbers. A typical California profilograph-style trace will also be available for review to verify the contractor's equipment is operating properly.

Method B entails more preliminary logistics compared to Method A; however, it may be the preferred method for certain projects. Ongoing advances in the technology for measuring ride quality have developed today's newer generation of equipment. Many of these improvements were not available when the department's equipment was originally purchased. For example, the new style line lasers are able to provide more accurate measurements for heavily textured pavements such as concrete with longitudinal tining. Some of the contractors have invested in new state-of-the-art equipment. Hence, it may be advantageous for both the contractor and the department to utilize the contractor's equipment for their respective project's ride quality measurements; however, the contractor must also agree to this method of choice.

Regardless of the method selected, certain details must be provided to the equipment operator performing the acceptance runs. These include:

- The type of specification that applies (acceptance threshold or percent improvement).
- The precise limits for ride quality (POB, POE, and the exact limits of exclusions).
- The contractor's choice for method of measurement if it is a threshold specification (RQI or PIzero).

Do not approve the ride quality plan if any of this information is omitted. In addition, it is essential that the limits for ride quality be listed by mileage from the Ride POB, and not by stationing, nor by distances from crossroads. The contractor should provide the conversion from stationing to mileages in the format shown on page 9 of the FUSP 502(P) and submitted as part of the final ride quality plan. This conversion must account for station equations.

Technical questions regarding the ride quality specification and requests for ride quality measurements should be directed to Tom Hynes, Pavement Evaluation Engineer, at 517-322-5711 or hynest@michigan.gov.

_____ _____

Chief Operations Officer Engineer of Delivery

BOHD:C/T:TH:kab
Index: Pavement

cc:

C & T Division Staff	J. Polasek	M. DeLong
M. Van Port Fleet	J. Reincke	J. Culp
B. O'Brien	P. Collins	C. Rademacher
P. Sebenick	G. Moore	K. Reincke
T. Fudaly, FHWA	ACEC	APAM
CRAM	MAA	MCA
MCPA	MITA	MML